

REMARKS

Claims 1– 16 are pending in the application.

Independent claims 1 and 13 and dependent claims 4, 7, 9, and 10 have been rejected under 35 USC 102(e) as being anticipated by Chandrasekhar et al (US Patent 6,785,446).

Dependent claim 5 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Okuno et al (US Patent 5,247,594).

Dependent claim 8 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al.

Independent claim 11 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Lee et al (US Patent 6,807,372).

Dependent claim 12 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Trisnadi et al (US Patent 6,782,205).

Dependent claim 14 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Trisnadi et al (US Patent 6,782,205).

Independent claim 15 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Lee et al (US Patent 6,807,372).

Dependent claim 16 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Lee et al (US Patent 6,807,372) and further in view of Trisnadi et al (US Patent 6,782,205).

Claims 1-4, 6, 7, 9, and 10 have been rejected under the judicially created doctrine of obviousness-type double patenting over the claims 1-8 and 10 of copending Application No. 10/664,340.

Claim 11 has been provisionally rejected under 35 USC 101 as claiming the same invention as claim 9 of copending Application No. 10/664,340.

Information Disclosure Statement

Applicant has noted that only his IDS submitted on 1/20/2004 and not the list of references noted in the specification has been considered by Examiner.

Obvious Type Double patenting

Claims 1-4, 6, 7, 9, and 10 have been rejected under the judicially created doctrine of obviousness-type double patenting over the claims 1-8 and 10 of copending Application No. 10/664,340.

A Terminal Disclaimer, Form PTO/SB/25, to obviate the provisional Double Patenting rejection over copending application No. 10/664,340 is attached hereto. Applicants' attorney certifies and Examiner should note that both the instant application and copending application No. 10/664,340 are commonly assigned to and owned by Lucent Technologies, Inc. The required Terminal Disclaimer Fee under 37 CFR 1.20(d) is provided for using attached Form -2038.

In view of the Terminal Disclaimer, the Provisional Obviousness-Type Double Patenting rejection of claims 1-4, 6, 7, 9, and 10 should now be removed and these claims should now be allowable.

Double Patenting

Claim 11 has been rejected under 35 USC 101 as claiming the same invention as claim 9 of copending Application No. 10/664,340.

Independent claim 11 and its dependent claim 12 have been canceled without prejudice.

Rejections under 35 USC 102(e)

Independent claims 1 and 13 and dependent claims 4, 7, 9, and 10 have been rejected under 35 USC 102(e) as being anticipated by Chandrasekhar et al (US Patent 6,785,446).

Regarding Independent Claim 1

Referring to independent claim 1, the Examiner has stated “Chandrasekhar et al teach a series of three Mach_Zehnder interferometers (411, 412, 413 in Fig. 4 or Column 5, lines 31-42). The first and third MZI’s (411, 413) both include fixed 50/50 couplers (402, 409).”

Applicant agrees with Examiner’s interpretation of with regard to Chandrasekhar teaching three MZI’s.

The Examiner then states:

“The second MZI include a first adjustable coupler (411 as adjusted by 403 via Control 1A) and a second adjustable coupler (413 as adjusted by 406 via Control 1A).”

It appears that Examiner has characterized Chandrasekhar element 411 as both the first MZI and as the first adjustable coupler. Similarly Examiner has characterized element 413 as both the third MZI and as the second adjustable coupler. Examiner cannot have it both ways, that is, the element 411 (and 413) cannot be both an MZI and a coupler in claim 1.

First we assume that the element 411 and 413 are both couplers. In Fig. 4, if element 411 is a coupler, element 412 an MZI, and element 413 a coupler, then Examiner’s statement that “Chandrasekhar et al teach a series of three Mach-Zehnder interferometers (411, 412, 413 in Fig. 4 or Column 5, lines 31-42)” is not true. Hence, Chandrasekhar does not teach our claim 1, line 4, which recites “three cascaded Mach-Zehnder interferometers.”

We now assume that elements 411 and 413 are the first MZI and the third MZI, respectively. Our claim 1, at lines 8-9, recites

“a second MZI including a first adjustable coupler that is shared with the first MZI and a second adjustable coupler that is shared a third MZI”

In Chandrasekhar as noted by Examiner, the second MZI is 412 and the first MZI is 411 and, hence, the shared first adjustable coupler must be 404. However as shown, element 404 is not an adjustable coupler as recited in our claim 1, at lines 4-6, but rather is a fixed coupler, as described in Chandrasekhar, at col. 5, lines 47-49. Similarly in Chandrasekhar, the second MZI is 412, the third MZI is 411 and, hence, the shared second adjustable coupler must be 407. Again as shown, element 407 is not an adjustable coupler as recited in our claim 1, at lines 4-6, but rather is a fixed coupler, as described in Chandrasekhar, at col. 5, lines 47-49. Hence, Chandrasekhar does not teach sharing a “first adjustable coupler” and a “second adjustable coupler” as recited in our claim 1, lines 5-7.

Thus as discussed above, clearly Chandrasekhar does not teach what is recited in our claim 1. Moreover, Chandrasekhar is directed to an “optical equalizer for intersymbol interference mitigation” as opposed to our claim 1 which is directed to an “optical signal dispersion compensator.” Hence, since Chandrasekhar does not do the same function, in the same manner, and produce the same results as recited in our claim 1, Chandrasekhar does not anticipate our claim 1 under 35 USC 102(e). Additionally Chandrasekhar does not suggest, hint, or otherwise make obvious under 35 USC 103, how their “optical equalizer for intersymbol interference mitigation” can be adapted to implement the present “optical signal dispersion compensator” as recited in claim 1.

Thus, claim 1 should be allowable as presented.

Regarding Dependent Claims 4, 7, 9, and 10

Dependent Claims 4, 6, 7, and 8 have been rejected under 35 USC 102(e) as being anticipated by Chandrasekhar. As discussed above, since independent claim 1 should now be allowable under 35 USC 102(e) and 103, so should dependent Claims 4, 7, 9, and 10 for the same reasons as claim 1.

Regarding Independent Claim 13

Independent claim 13 recites a polarization independent tunable chromatic optical signal dispersion compensator (TDC) apparatus comprising a cascaded arrangement of a first TDC and a second TDC. Each of the first and second TDCs are implemented to include the elements recited in allowable claim 1. Thus, claim 13 is a cascaded version of two claim 1-type TDCs. The Examiner has stated, Chandrasekhar teaches a cascaded arrangement of two sets of MZIs. However, as previously discussed, each of Chandrasekhar's sets of MZIs does not anticipate our claim 1 under 35 USC 102(e) or make obvious our claim 1 under 35 USC 103. Consequently, since claim 13 is a cascaded version of two claim 1-type TDCs, Chandrasekhar cascaded arrangement of two sets of MZIs does not anticipate our claim 13 under 35 USC 102(e) or make obvious our claim 13 under 35 USC 103. Thus, claim 13 should be allowable as presented.

Regarding Dependent Claim 2

Dependent claim 2 has not been rejected and is allowable over Chandrasekhar under 35 USC 102(e). Nonetheless, dependent claim 2 has been rewritten in independent form to include all the limitation of independent claim 1. As rewritten, independent claim 2 should remain allowable under 35 USC 102(e) and 103 over Chandrasekhar.

Regarding Dependent Claim 5

Dependent claim 5 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Okuno et al (US Patent 5,247,594). As previously discussed, independent claim 1 is allowable over Chandrasekhar under 35 USC 103(a). Dependent claim 5 depends from dependent claim 4 and from allowable independent claim 1. Hence dependent claim 5 should also be allowable over Chandrasekhar under 35 USC 103(a).

The Examiner has cited Okuna as teaching
“to let two paths of the adjustable coupler have an optical path length difference of half wavelength in the zero power state.”

However, Okuna does not teach what is lacking in Chandrasekhar, namely, the use of an adjustable coupler between the first and second MZIs and the use of an adjustable coupler between the second and third MZIs. Hence, Chandrasekhar in view of Okuna still does not teach or make obvious the sharing a “first adjustable coupler” and a “second adjustable coupler” as recited in our claim 1, lines 5-7. Thus, independent claim 1 should be allowable under 35 USC 103(a) over Chandrasekhar in view of Okuna. Consequently, dependent claim 5, which depends from independent claim 1 through dependent claim 4, should be allowable under 35 USC 102(e) and 103(a) over Chandrasekhar in view of Okuna for the same reasons as independent claim 1.

Regarding Dependent Claim 8

Dependent claim 8 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al.

As previously discussed, independent claim 1 is allowable over Chandrasekhar under 35 USC 103(a). Since dependent claim 8 depends from allowable independent claim 1 it should also be allowable over Chandrasekhar under 35 USC 103(a).

Regarding Dependent Claim 11

Independent claim 11 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Lee et al (US Patent 6,807,372).

As previously noted in the “CLAIM AMENDMENTS” section , claim 11 has been canceled without prejudice.

Regarding Dependent Claim 12

Dependent claim 12 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Trisnadi et al (US Patent 6,782,205).

As previously noted in the “CLAIM AMENDMENTS” section, claim 12 has been canceled without prejudice.

Regarding Dependent Claim 14

Dependent claim 14 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Trisnadi et al (US Patent 6,782,205).

Dependent claim 14 depends from allowable independent claim 13. As previously discussed, independent claim 13 recites a polarization independent tunable chromatic optical signal dispersion compensator (TDC) apparatus comprising a cascaded arrangement of a first TDC and a second TDC. Each of the first and second TDCs are implemented to include the elements recited in allowable claim 1. Thus, claim 13 is a cascaded version of two claim 1-type TDCs and, as such, is allowable under 35 USC 102(e) and 103(a) over Chandrasekhar for the same reasons as independent claim 1.

The Examiner has cited Trisnadi as teaching “the using of a half wave plate (216) in a path of light to create a signal offset of $\frac{1}{2}$ wavelength.”

However, Trisnadi does not teach what is lacking in Chandrasekhar regarding each TDC, namely, the use of an adjustable coupler between the first and second MZIs and the use of an adjustable coupler between the second and third MZIs. Hence, Chandrasekhar in view of Trisnadi still does not teach or make obvious the sharing a “first adjustable coupler” and a “second adjustable coupler” as recited in our claim 13, lines 9-10. Thus, independent claim 1 should be allowable under 35 USC 103(a) over Chandrasekhar in view of Trisnadi. Consequently, dependent claim 14, which depends from independent claim 1, should be allowable under 35 USC 102(e) and 103(a) over Chandrasekhar in view of Trisnadi for the same reasons as independent claim 13.

Regarding Independent Claim 15

Independent claim 15 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Lee et al (US Patent 6,807,372).

Independent claim 15 recites a reflective TDC that comprises an arrangement of three claim 1-type cascaded MZIs connected to a reflector which reflects the signal back through the three MZIs. Claim 15 has been amended to more clearly recite this aspect.

Independent claim 15, lines 3-4, like independent claim 1 recites the use of an adjustable coupler between the first and second MZIs and the use of an adjustable coupler between the second and third MZIs. Hence claim 15, like independent claim 1, should be allowable under 35 USC 103(a) over Chandrasekhar.

The Examiner has cited Lee as teaching

“an MZI structure where a reflecting mirror is placed between the two sets of MZIs, so that all light signals are reflected back and the second set of MZIs are not needed.”

However, Lee does not teach what is lacking in Chandrasekhar regarding the use of an adjustable coupler between the first and second MZIs and the use of an adjustable coupler between the second and third MZIs. Hence, Chandrasekhar in view of Lee still does not teach or make obvious the sharing a “first adjustable coupler” and a “second adjustable coupler” as recited in our claim 15, lines 3-4. Thus, independent claim 15 should be allowable under 35 USC 103(a) over Chandrasekhar in view of Lee.

Regarding Dependent Claim 16

Dependent claim 16 has been rejected under 35 USC 103(a) as being unpatentable over Chandrasekhar et al in view of Lee et al (US Patent 6,807,372) and further in view of Trisnadi et al (US Patent 6,782,205).

As discussed above, independent claim 15 is allowable under 35 USC 103(a) over Chandrasekhar in view of Lee.

The Examiner has cited Trisnadi as teaching

“the using of a quarter wave plate (216) in a path of light to create a signal offset of 1/4 wavelength.”

However, Trisnadi does not teach what is lacking in Chandrasekhar, namely, the use of an adjustable coupler between the first and second MZIs and the use of an adjustable coupler between the second and third MZIs. Hence, Chandrasekhar in view of Trisnadi still does not teach or make obvious the sharing a “first adjustable coupler” and a “second adjustable coupler” as recited in our claim 15, lines 3-4. Thus, independent claim 15 should be allowable under 35 USC 103(a) over Chandrasekhar in view of Trisnadi. Consequently, dependent claim 16, which depends from independent claim 15, should be allowable under 35 USC 103(a) over Chandrasekhar in view of Trisnadi for the same reasons as independent claim 15.

Additional prior Art

The additional prior art made of record and not relied upon has been noted.

Summary

In summary for the above reasons, claims 1 – 10 and 13-16 should now be allowable under 35 USC 101, 102(e), and 103(a) and the same is respectfully requested.

If there is any remaining issue, applicant’s attorney would welcome a call from the Examiner to resolve such issue.

Respectfully,

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